



# SEMA News

Missouri State Emergency Management Agency  
*Preparedness · Response · Recovery*

Spring

2016



Low-water bridge over Tavern Creek in Pulaski County where five foreign military officers drowned when their vehicle was swept away by flooding on Dec. 26, 2015.

## Missouri's 27 Flooding Fatalities Last Year Were 22-year High; Many Were at Low-water Crossings

Flooding killed 27 people in Missouri in 2015, surpassing the number killed by flooding during the previous seven years combined, according to the National Weather Service, which tracks weather-related deaths.

The total was the highest in Missouri since 1993, the year of the Great Mississippi River Flood, when 28 people died as a result of flooding. In 2015, 23 of the flooding deaths involved motor vehicles, with many of the victims being swept away while inside their vehicles at low-water crossings or low bridges affected by flash flooding.

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## Historic December Flooding Leads to Second Major Disaster of 2015

Beginning on Dec. 22 and continuing for most of the next week, a series of severe storms dumped record levels of rain over much of the state. With the ground already saturated from previous rains, streams and rivers quickly swelled, causing widespread flash flooding and flooding across much of eastern and southern Missouri. On Dec. 26 alone, 11 people died in flash flooding, as torrential rains pushed creeks and streams to historic levels. Some areas received nine or more inches of rain in two days.

On Dec. 27, Gov. Nixon declared a state of emergency in response to the flooding and because forecasts were calling for more rain that could swell some rivers above historic crests. The emergency declaration activated the State Emergency Operations Center (SEOC), which enables the state to mobilize its resources, including SEMA, to assist local authorities.

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## Director's Letter

**"I am particularly impressed with the teamwork that led to the success of "Operation Recovery," the debris removal program for hard-hit Franklin, Jefferson, St. Louis and St. Charles counties."**

***Ron Walker***

The last week of 2015 showed once again just how unpredictable, dangerous and destructive weather can be.

Heavy rains led directly to 16 deaths, major damage or the destruction of almost 1,000 homes and buildings and flooding in areas that had never flooded before. It not only led to a Public Assistance disaster declaration, but to Missouri's first Individual Assistance declaration since 2011.

I'm proud of how SEMA and our local, state and federal partners, along with volunteers, faith-based and private partners, responded to assist the people of Missouri. In this issue, you'll find a summary of some of the fine work that we've accomplished.

I am particularly impressed with the teamwork that led to the success of "Operation Recovery," the debris removal program for hard-hit Franklin, Jefferson, St. Louis and St. Charles counties. It was a model of collaboration between SEMA, the Missouri National Guard, FEMA, the Environmental Protection Agency, the Army Corps of Engineers, AmeriCorps, countless volunteers and 20 separate jurisdictions in the four counties.

But I'll remember that 27 people died as a result of flooding in 2015. National Weather Service statistics show that surpasses the number killed the previous seven years combined. According to NWS, 23 of the flooding victims were in motor vehicles. On Dec. 26, in Pulaski County seven people died within minutes in two separate incidents where vehicles were swept off low-water crossings.

I hope our Missouri emergency management and response partners will use every opportunity they get to educate Missourians about the dangers of flash flooding, particularly to motorists at rural low-water crossings.

As part of Severe Weather Awareness Week this month we'll be pushing the message "Stop Missouri Flooding Deaths." There is specific information on the risks at [www.mo.gov/stopfloodingdeaths](http://www.mo.gov/stopfloodingdeaths). I hope you'll share the link with your communities.

## EVALUATING SEMA NEWS

This is the ninth issue of **SEMA News** and begins the newsletter's third year of publication. I think it's time you assess the newsletter and for SEMA to get your thoughts.

Our intent with **SEMA News** is to share useful information that helps raise awareness about issues, events and developments relevant to our emergency management partners and stakeholders. **SEMA News** articles have covered such topics as response and recovery lessons learned from disasters, as well as explanations of sometimes confusing federal recovery and mitigation programs. We've also featured overviews of large-scale disaster response and recovery efforts that spanned much of our state and involved multiple partners. You can find all issues on the SEMA website under the "News and Publications" tab.

To help build greater familiarity with people and places across our community, each issue of **SEMA News** has featured one of Missouri's nine emergency management regions. It gives an overview of the region's unique characteristics, outlines some of its emergency management challenges and introduces each region's local EMDs.

While I think **SEMA News** has been a success, an evaluation now will help us gauge its actual usefulness and determine how we can improve it based on readers' interests and needs. We plan to begin the evaluation process at the SEMA conference in April and want to gather as much input as possible. The conference evaluation form will include a **SEMA News** evaluation section, which conference attendees can fill out when they complete the form before leaving the conference. We'll use the evaluations to help guide us in making **SEMA News** an even more useful, enjoyable publication.

**Ron Walker, Director**  
**Missouri State Emergency Management Agency**



EPA contractors use heavy equipment to remove flood debris in the St. Louis region during Operation Recovery.

## 'Operation Recovery' Speeds Debris Removal in Hard-hit St. Louis Region

To help speed the recovery process following the December storms, Gov. Jay Nixon requested President Barack Obama issue an emergency declaration to provide federal resources to assist debris-removal and disposal efforts in the hardest-hit St. Louis region. The Governor requested federal assistance on Saturday, Jan. 2, and the request was approved that evening.

A federal emergency declaration provides short-term federal assistance and funding to help state and local governments meet a specific emergency need or to help prevent a major disaster from occurring. The Federal Emergency Management Agency pays 75 percent of the program's cost, while the state pays 25 percent.

"Having been through the Joplin tornado recovery, we knew how important debris removal is to speeding the recovery and rebuilding process," Gov. Nixon said. "Additionally, with the federal government and the state paying for the program, it relieved the financial burden on the communities that had been so hard hit."

Gov. Nixon tapped the Missouri National Guard to lead the joint state/federal debris-removal effort termed "Operation Recovery."

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## NWS Works to Enhance Severe Storm Warnings

When it comes to issuing severe storm warnings, accuracy and timing mean everything, especially when a tornado is imminent. A few minutes can mean the difference between life and death. That's why the National Weather Service constantly works to develop more accurate storm warnings that provide the public more time to take protective action.

Progress in this effort is being made at the National Severe Storms Laboratory, where researchers are working on a new computer modeling system called Warn-on-Forecast. When complete, the advanced modeling system will create projections that more accurately predict tornadoes, large hail and extreme localized rainfall. To accomplish this it will use new weather observation and rapid, adaptive radar scanning capabilities to predict probabilities of a hazard occurring, the level of confidence in the storm's path and adjust to changes in the threat level.

If Warn-on-Forecast is ultimately successful, backers believe forecasters will have reliable guidance for issuing tornado, severe thunderstorm and flash flood warnings up to an hour before they strike. Currently, NWS officials don't issue warnings for local severe weather until they see an early signal on radar or the weather hazard is actually spotted. This approach provides the public with an average of 13 minutes advance notice before a tornado strikes.

"One of the challenges we face in predicting severe storms with any precision is gathering enough accurate surface data into the modeling system and it running fast enough to do any good in terms of a real-time warning," said Jim Kramper, NWS St. Louis Forecast Office warning coordination meteorologist. "The Warn-on-Forecast system will allow us to provide more accurate public warnings and with more response time to move to safety."

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## Missouri Responders Issue Drone Warning

The popularity of personal Unmanned Aircraft Systems (UAS), known as drones, has exploded over the past two years and continues to grow. According to an August 2015 Consumer Electronics Association estimate, hobbyists were expected to buy up to 700,000 drones in the U.S. last year.

Dropping prices and the wide variety of possible applications are driving the sales boom among hobbyists, businesses and government agencies. But the growing number of drones in the air can create safety risks. Drones are too small to appear on aircraft radar, making them difficult to avoid. Although most weigh just a few pounds, aviation experts say a drone could still cause a mid-air disaster if it is sucked into an engine or it hits a propeller or windshield.

According to a study submitted to the Federal Aviation Administration by the Bard College Center for the Study of the Drone, pilots reported more than 650 close calls with drones between January and August 2015. This was nearly triple the number of close-call reports for all of 2014.

After observing several drones during the recent flooding, the Missouri Highway Patrol requested citizens not fly drones anywhere a helicopter was flying. While some drone safety guidelines may allow drone flying up to 400 feet, state and local authorities had been flying closer to the ground than normal to survey flooding and determine the integrity of levees and other structures. State officials were concerned the unmanned aircraft could interfere with emergency responders, compromising their safety.

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## FEMA Seeking Input on Disaster Deductible Concept

FEMA is exploring a new concept in the federal disaster process. What is being called a “disaster deductible” would require states to meet a predetermined level of state disaster funding, similar to meeting an insurance deductible, before receiving federal Public Assistance following a major disaster declaration. States may be able to offset some disaster deductible up-front costs by investing in mitigation projects and other resilience-building efforts.

If the idea were implemented, it would encourage state mitigation strategy development to build resilience to disaster damage, as well as reduce disaster response and recovery costs. It could also help strengthen response and recovery capabilities by encouraging closer state and local government planning and budgeting efforts, according to FEMA.

### STAKEHOLDER INPUT SOUGHT

FEMA is not currently proposing to implement the disaster deductible concept, but because it would represent a significant change in the federal Public Assistance and Mitigation programs, the agency is seeking stakeholder input on whether it should be adopted in the future. Using the federal government’s Advance Notice of Proposed Rulemaking, FEMA is soliciting public comments on all aspects of the new concept, including how to calculate and satisfy a state’s financial commitment, the financial commitment’s scope, how the deductible concept could influence change, how it would apply to states and its estimated impact.

If FEMA chooses to further pursue the disaster deductible concept, it would begin a multi-step process. First, the public comments would be used to formulate a model for consideration. When complete, FEMA would release a Notice of Proposed Rulemaking to seek further public comment on the proposed model.

To submit comments, go to [www.Regulations.gov](http://www.Regulations.gov) and enter docket I.D. FEMA-2016-0003. Or, go to <https://federalregister.gov/a/2016-00997>. Comments must be received by March 21, 2016. For more information, go to [FEMA-IGA@fema.dhs.gov](mailto:FEMA-IGA@fema.dhs.gov).

## Missouri Emergency Management Region Profile: Region F

Region F is located in central Missouri and comprises 13 counties: Audrain, Boone, Callaway, Camden, Cole, Cooper, Howard, Gasconade, Miller, Moniteau, Montgomery, Morgan and Osage. The region's population is more than 493,000. With a population of nearly 117,000, Columbia is the region's largest city and the fourth largest urban area in Missouri. It is home to the University of Missouri, Stephens College and Columbia College. Nineteen other colleges and universities are located across Region F.

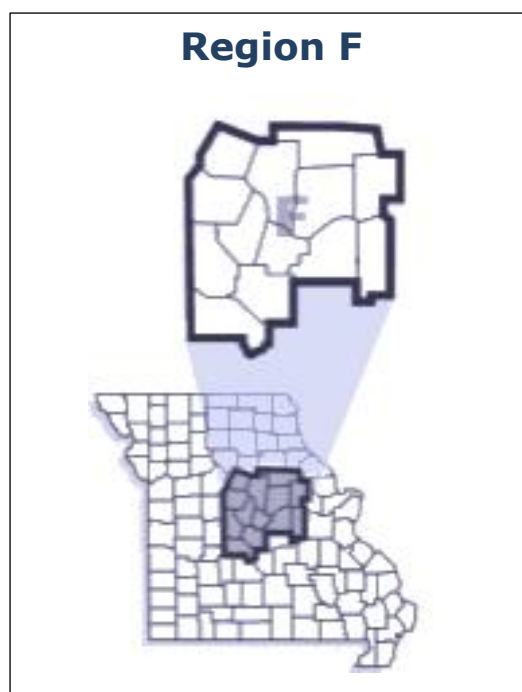
Missouri's capital, Jefferson City, is the region's second largest city, with a population of just over 43,000. From January through May each year, 34 state senators and 160 representatives gather at the state capitol for regular sessions of the General Assembly.

Agriculture is important to the economy of the region, with a wide range of farming operations, including poultry, hogs, cattle and horses to row crops of corn, soybeans, wheat, milo and grain sorghums.

Region F is home to the Lake of the Ozarks, one of the world's largest man-made reservoirs, covering 86 square miles and parts of Camden, Miller and Morgan counties. The lake entire length of the lake, including all tributaries and long coves, is about 180 miles long. Its 1,100 miles of shoreline is more than California's Pacific coastline. A major tourist destination, the lake's resorts, shopping districts and recreation opportunities draw about 5 million visitors to the area each year.

Bagnell Dam impounds the Osage River, creating the Lake of the Ozarks. A hydroelectric dam that produces more than 500 million kilowatt hours of electricity annually, the half-mile long, 148-foot high dam holds back 600 billion gallons of water flowing in from the Osage River. There are 92 other regulated dams in Region F.

The Callaway Energy Center, Missouri's only nuclear power plant, is located in Callaway County near the town of Reform. More than 1,000 employees and contractors work at the plant, which produces enough electricity to power more than 800,000 households. The University of Missouri-Columbia also houses a regulated, non-pressurized nuclear research reactor.



The Missouri River flows through the region, as do the Osage, Moreau and Loutre rivers. Major highways that pass through Region F include Interstate-70 and US highways 50, 54 and 63.

The region is also busy with rail traffic, including Amtrak passenger trains running between St. Louis and Kansas City, and freight transport by Union Pacific, Norfolk Southern, Kansas City Southern and Burlington Northern Santa Fe railroads.

Columbia Regional Airport is the only airport with regularly scheduled commercial service in the region.

In the past five years, all 13 Region F counties have been declared for at least one of the six federal major disaster declarations for severe storms, flooding or winter storms. Eight of the region's 13 counties were included in the DR4238 declaration Aug. 10, 2015 after spring and summer storms created widespread flooding that damaged homes, businesses and infrastructure across the state. A ninth Region F county was added on Aug. 31, when eight counties were added to expand DR4238 to include a new total of 76 counties, the largest since the Great Flood of 1993.

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## Region F Emergency Management Directors

### Barlow Biggers, Miller County

Barlow Biggers has served as Miller County EMD since 2005. Prior to becoming an EMD, Biggers served in the U.S. Army for 30 years.

Biggers says the biggest challenge he faces as an EMD is making sure county residents' needs are met during disasters.

According to Biggers, the most rewarding aspect of his job is knowing that he is doing something good for his county.

Biggers and his wife live at the Lake of the Ozarks. They have two grown children.

### Bill John, Howard County

Bill John has been the Howard County EMD for nine years. Prior to being named county EMD, John served with the Fayette Police Department and retired as a captain after 30 years.

John says one of the most challenging aspects of his job is maintaining an effective emergency management program on a small budget.

He said he gets the most satisfaction from working with citizens to be prepared for disasters and from building strong partnerships with other emergency managers in the region.

John lives on a small Howard County farm. He has one daughter, Leah, and two granddaughters, Shelby and Cameron.

### Steve Shaw, Audrain County

Steve Shaw has served as Audrain County EMD since 2011. Previously, he served as Audrain Medical Center's EMD. He has also worked as a cross-disaster specialist with the American Red Cross and has 25 years of experience in emergency medical services and hazmat response.

According to Shaw, the greatest challenge he faces as an EMD is fostering effective communication and cooperation among rural emergency management agencies.

Shaw said the most rewarding aspect of his job is knowing his work helps residents be prepared for disasters, which ultimately saves lives.

Steve and his wife, Missy, live in Mexico. They have grown children and five grandchildren.

### Ron Gentry, Camden County

Ron Gentry was named Camden County EMD on March 1, 2015. Previously, he served with the volunteer Mid-County Fire Protection District for nearly 35 years, 22 as fire chief.

As a new EMD, Gentry said the biggest challenge has been becoming familiar with the many forms and procedures required of his position, as well as learning the different acronyms used by his local, state and federal emergency management partners.

Gentry said that serving others gives him the most satisfaction in his work.

Gentry and his wife, Sandy, together have four grown children, 12 grandchildren and one great grandchild.

### Bob Bishop, Montgomery County

Bob Bishop has served as Montgomery County EMD for 18 years. He also serves as county floodplain administrator, local emergency planning committee chairman and 911 coordinator.

Prior to becoming an EMD, Bishop owned a commercial building company. He also worked as a building inspector for Montgomery City and was the county's first planning and zoning administrator.

Bishop said his biggest challenge is getting the different emergency management partners to work together and ensuring that they report critical information during emergencies.

Bishop said he derives his greatest satisfaction from helping people, especially during emergencies and from building close working relationships with emergency management colleagues.

Bishop and his wife, Holly, have two grown children, Tyler and Libby.

### Eric Evans, University of Missouri

Eric Evans is the emergency management coordinator for the University of Missouri, a position he took in March 2014 after working for the university's extension program since 2000. Prior to joining the university, Evans served 13 years with SEMA as an all-hazards planner and training officer.

Evans is a colonel in the Missouri National Guard and serves as commander of the 229th Multi-Functional Medical Battalion. He holds a B.A. in medical sociology and healthcare management from the University of Missouri and has completed the Homeland Security-Homeland Defense post-graduate certificate. **(Continued on next page)**

Evans says one of the greatest challenges he faces in his position is getting university students to understand their vulnerability and the importance of preparedness. He said another major challenge is effectively warning the university's approximately 50,000 students, faculty and staff of impending emergencies.

Evans said he enjoys providing people with potentially life-saving information, as well as working with staff on plans and exercises that improve preparedness and resiliency.

Eric and his wife live in Columbia and have one adult son.

### **Terry Cassil, Boone County**

Terry Cassil is Boone County EMD, a position he has held just since December. Prior to joining the county, Cassil served as SEMA Response Division manager from November 2014 to December 2015. Cassil joined SEMA after retiring from the Columbia Fire Department where he served for 21 years and attained the rank of assistant chief.

Cassil says that the greatest challenge in his new position as EMD is working with Boone County's many different partner agencies and becoming familiar with the county's vast resources.

Cassil says he gets satisfaction knowing that training, exercising and planning with emergency management partners and stakeholders will pay off during times of disaster.

Cassil and his wife, Dawn, live on his family farm near Jamestown. They have three grown children and three grandchildren.

### **Bill Roll, Moniteau County**

Bill Roll has served part-time as Moniteau County EMD for more than two years. He also works full-time as an EMT and base manager for the Mid-Missouri Ambulance District. Roll has worked as an EMT for 17 years and is an experienced volunteer firefighter and 911 dispatcher. He also served for eight years in the U.S. Army Reserve as a combat medic.

Roll says he is still learning the EMD position and one of the biggest challenges is helping residents understand the roles, responsibilities and importance of the county emergency management agency.

Roll says the most rewarding part of his job is helping to make things better for Moniteau County residents. Roll is a life-long resident of California, where he lives with his daughter.

### **Susan Rockett, City of Mexico**

Susan Rockett has served as part-time EMD for the city of Mexico for six years and she works full-time as the city chief of public safety. She has 23 years of law enforcement and firefighting experience.

Rockett says one of the biggest challenges she faces as EMD is convincing the public that disasters can happen anywhere at any time.

Rockett says she gets the greatest satisfaction from preparing for the worst and knowing that response and recovery measures are in place to care for the community when disaster strikes.

### **Bill Farr, Jefferson City/Cole County**

Bill Farr has served as EMD for Jefferson City and Cole County since 2007. Previously, Farr served as Missouri State Fire Marshal from 1995 to 2005. He also served as an investigator for the office from 1986 to 1994, when he was promoted to deputy chief of investigations. He also has served as fire chief for the city of Republic, and officer with the Republic Police Department and worked as a volunteer firefighter in Greene County.

Farr says one of the greatest challenges he faces as EMD is working with funding that does not adequately support effective emergency preparedness and response planning and training.

Farr says his greatest reward is working with local and state emergency management partners in both the public and private sectors.

Farr and his wife, Joanie, live in Jefferson City. They have two grown children and six grandchildren.

### **Andrea Rice, Osage County**

Andrea Rice has served as EMD for Osage County since 2005. She also serves as county 911 coordinator. Prior to becoming an EMD, Rice served eight years as a military police officer in the U.S. Army.

Rice says the greatest challenge she faces in her work is floodplain management in a county that does not have a building and zoning ordinance.

Rice says she gains satisfaction from working with and helping the county's emergency responders as well as its citizens.

Rice and her husband, Vince, live in Linn and have three children, Cole, Nate and Trey.



## Joplin to Commemorate 5<sup>th</sup> Anniversary of Historic EF-5 Tornado

May 22 will mark the fifth anniversary of the EF-5 Joplin tornado that killed 161 people, injured more than 1,000 and destroyed or damaged 8,000 homes and structures. To commemorate the victims and celebrate the region's recovery, Joplin will host a series of events from May 19-22.

Organized by a volunteer committee called Joplin Proud, planned events include a community beautification project, home and business recovery tours, a marathon and children's fun run, a walk of silence and a pet reunion.

One of the key events during the four-day commemoration will be a Joplin disaster recovery summit set for May 19-20 at Joplin's Missouri Southern State University. The summit will provide lessons learned about disaster recovery and community resilience presented by leaders and elected officials from across the nation who are guiding their communities through long-term recovery efforts following major disasters. The event is designed especially for small and medium-size communities and is open to emergency managers, community leaders, mental health professionals, non-profit organizations and government agencies.

The two-day summit will open with a panel discussion on community resilience. The discussion will be moderated by Beth Freeman, administrator for FEMA Region VII, and include panelists from Greensburg, Kan., Cedar Rapids, Iowa, Moore, Okla., Minot, N.D., Tuscaloosa, Ala. and Joplin.

Summit agenda and registration, a list of breakout sessions and other information can be accessed at [www.joplinproud.com](http://www.joplinproud.com). There is a \$75 registration fee and attendance will be restricted to 300 due to space limitations. View the agenda and register at <http://www.joplinproud.com/joplin-disaster-recovery-summit/>. For more information, contact Jane Cage at [jane@janecage.com](mailto:jane@janecage.com).

The four-day commemoration will culminate on Sunday, May 22, with the Joplin High School graduation, a community reunion picnic and a non-denominational memorial service to honor those killed by the tornado.

## SEMA Conference is April 19-22

The 28<sup>th</sup> annual Missouri Emergency Management Conference is set for April 19-22, 2016, at the Chateau on the Lake in Branson.

Conference registration opens Tuesday, April 19, from 1 p.m. to 5 p.m. in the Chateau's convention center. No conference activities are scheduled on the 19<sup>th</sup>.

Conference activities begin in earnest on Wednesday, April 20, with registration and exhibits opening at 7:30 a.m. in the Chateau's Great Hall. Opening remarks and introductions begin at 8:30 a.m., followed by lunch and a full agenda of general-session presentations and informative breakout sessions.

Check the conference agenda and other details on the SEMA website under *Upcoming Events*.

[www.sema.dps.mo.gov](http://www.sema.dps.mo.gov)

The keynote speaker at the opening session is security and intelligence expert Dr. Paul Chabot, who will discuss the threat of localized terrorism and the importance of local planning. The president of Chabot Securities International, Inc., Chabot served as an intelligence officer with the U.S. Joint Special Operations Forces during the Iraq War. He currently is a lieutenant commander in the U.S. Navy Reserve, serving as department head for the Command Pacific Fleet Intelligence Reserve Unit. Chabot also has over 20 years of law enforcement experience, having served full-time with the University of Southern California Public Safety Department and as a reserve deputy sheriff for the San Bernardino County Sheriff's Department.

This year's conference includes breakout sessions on providing information and insight about topics such as effectively using GIS, WebEOC and other technology during emergencies, multi-agency resource centers and key changes in FEMA's Public Assistance Program. The exhibit hall will be open throughout the conference.

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## Missouri's 27 Flooding Fatalities

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### CATALYST FOR ACTION

State Emergency Management Agency Director Ron Walker says he hopes the 22-year-high death toll serves as a catalyst for greater public awareness of the danger posed by flooding, and gets people to change driving behaviors when flooding is forecast.

"The number of people killed in vehicles by flash flooding last year should be a wakeup call for all Missourians of the terrible risk posed by driving during flash flooding," SEMA Director Walker said. "I think all of us in the emergency management and emergency response communities should use every opportunity we have to remind the public of the very serious danger and try to get people to immediately think of driving safety when they hear flash flooding is in the forecast."

### 7 DEATHS WITHIN MINUTES IN PULASKI COUNTY

The extreme danger flash flooding creates at low-water crossings was brought home in a matter of minutes in Pulaski County on Dec. 26. About 8:26 p.m. that evening, five foreign military officers drowned after flooded Tavern Creek swept their vehicle from a low-water crossing near Crocker. The five men had been assigned to the International Student Detachment at nearby Fort Leonard Wood.

Three minutes after the call went out for this incident, another emergency call was made about 10 miles away. A car driving on Highway O had been swept off a low-water bridge over normally shallow Jones Creek.

In most areas of the state, Dec. 26 was the wettest day of the final week of the year that brought historic flooding to many part of the state. Springfield received just over six inches of rain on Dec. 26. St. Louis received almost five inches. According to the weather service, four other people died in flash flooding on Dec. 26, one each in Dallas, Greene, Lawrence and Polk counties. In addition, a duck hunter drowned in Vernon County, which has been classified as a flooding death by NWS.

### HAZARDOUS LOW-WATER CROSSINGS

A low water crossing – sometimes simply a concrete slab – provides a bridge when water flow is low, typically over creeks and streams in rural areas. It is these types of normally shallow creeks



that are most prone to surging dramatically during heavy rainfall. But too often motorists attempt to drive across these low bridges. Other times, when visibility is low due to rain or darkness, drivers may wind up in the floodwater before they ever have a chance to stop and turn around.

According to the weather service, more deaths occur due to flooding each year than from any other thunderstorm-related hazard in the U.S. The Centers for Disease Control and Prevention (CDC) reports that more than half of all flood-related drownings occur when a vehicle is driven into floodwaters, with many of the deaths occurring as the vehicles are swept downstream. The next highest percentage of flood-related deaths is due to walking into or near flood waters.

### TURN AROUND. DON'T DROWN

For decades, the National Weather Service and other organizations have promoted the safety message "Turn Around. Don't Drown" to implore the public not to risk driving into floodwaters. But NWS St. Louis Forecast Office Warning Coordination Meteorologist Jim Kramper expressed frustration that the message was not getting through and made a public plea for suggestions on new ways to communicate the danger on Dec. 29, 2015.

Kramper said that, following agency policy, they would be reviewing flash flood warnings and messaging to try to figure out if another approach could help convey the seriousness of the situation to the public.

"One of our agency's primary missions is to help protect the public and each member of our team really feels a sense of loss when we believe a weather-related death could have been prevented," Kramper said.

Just six inches of fast-moving water can knock over an adult. It takes just 12 inches of rushing water to carry away a small car, while two feet of rushing water can carry away most vehicles. It is never safe to drive or walk into flood waters.

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## 2015 Rainfall at a Glance

Many areas around the state saw record rainfall. Here are some of the noteworthy marks.

**Rainfall during Dec. 26-28:** St. Louis 9.18 inches; Jefferson City 5.17 inches; St. Charles 8.04 inches; Farmington 5.99 inches.

**Daily record rainfall for Dec. 26:** Springfield, Joplin, Rolla Vichy and St. Louis. Highest was Springfield: 6.03 inches.

**December monthly rainfall records:** St. Louis 11.74 inches; Springfield 11.43 inches; Joplin 9.77 inches; Rolla-Vichy 10.32 inches.

**St. Louis had its wettest year on record:** 61.24 inches

## Missouri's 27 Flooding Fatalities

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### SAFETY MESSAGES FOR PUBLIC

SEMA has created a flash flooding safety page that includes facts, safety messages and videos. Please share it with as many people as possible. It's at [mo.gov/stopfloodingdeaths](http://mo.gov/stopfloodingdeaths).

Here are some key safety messages:

- Flash flooding kills far more people in the U.S. than tornadoes, lightning or hurricanes, making it the primary killer among all severe weather hazards, according to NOAA.
- More than half of all flash flooding-related fatalities are vehicle related.
- Less than a foot of moving water is enough to push a vehicle.
- Never expect barriers to block off flooded low-water crossings because floodwaters often rises so quickly authorities cannot close a road or put up barriers in time.
- Motorists may wind up in flood waters before seeing the flooding because of limited visibility due to darkness or heavy rain. Don't drive in areas experiencing flash flooding unless absolutely necessary. **Turn Around. Don't Drown.**
- Never think that because you made it across a flooded low-water crossing in the past that you'll make it the next time. Many areas saw record flooding in 2015 and others will in the future.

If you're tempted to drive into floodwater because it appears shallow, understand floodwaters often wash out roads or compromise their structural integrity.

## Historic December Flooding

(Continued from page 1)

The Missouri State Highway Patrol and local responders performed hundreds of flood rescues and evacuations across the state. In the St. Louis area, the Meramec River crested four feet over its previous record, rising 35 feet in three days. A 24-mile stretch of I-44 was closed, along with parts of I-70 and I-55.

On Dec. 29, Gov. Nixon activated the Missouri National Guard to protect local communities and support emergency response personnel. More than 600 guardsmen deployed to flood areas to assist with directing traffic away from road closures, providing security around breached levees and evacuated areas and conducting health and wellness checks of residents in affected areas. At that time, flooding had already led to the evacuation of West Alton and caused hundreds of road closures across Missouri.

### DEBRIS REMOVAL

As the flood waters receded, it became clear that managing all the debris left by the flood would be a major undertaking. On Jan. 2, Gov. Nixon requested a federal emergency declaration for direct federal assistance with the debris removal. The request was approved later that day. The Missouri National Guard was assigned to supervise and coordinate the debris removal program, working closely with the federal and local governments. At the federal level, the U.S. Army Corps of Engineers facilitated the collection and disposal of debris left behind by flood water and household debris, such as demolition materials, carpeting, furniture and appliances.

### FEDERAL MAJOR DISASTER DECLARATION

On Jan. 15, Gov. Nixon requested the federal government declare a major disaster for Missouri. The storms led to 16 deaths, destroyed more than 200 homes and other buildings and did major damage to more than 750.

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## Historic December Flooding

(Continued from page 10)

In his request, the Governor sought Individual Assistance so eligible residents in 41 Missouri counties could seek federal assistance, such as help with temporary housing and repairs, and to replace household items damaged or lost as a result of flooding. In addition, the Governor sought assistance from the Small Business Administration (SBA) to assist impacted businesses and residents with low-interest loans.

The request was approved on Jan. 21 for 33 counties: Barry, Barton, Camden, Cape Girardeau, Cole, Crawford, Franklin, Gasconade, Greene, Hickory, Jasper, Jefferson, Laclede, Lawrence, Lincoln, Maries, McDonald, Morgan, Newton, Osage, Phelps, Polk, Pulaski, Scott, St. Charles, St. Francois, St. Louis, Ste. Genevieve, Stone, Taney, Texas, Webster and Wright.

### DISASTER DECLARATION EXPANSION

On Jan. 25, Gov. Nixon requested an expansion of the federal major disaster declaration to include assistance for public agencies and nonprofits for the cost of responding to and recovering from the historic flooding. The expansion request included the City of St. Louis and 39 Missouri counties.

The request for federal public assistance was approved Feb. 10 for the City of St. Louis and 37 counties: Barry, Bollinger, Camden, Cape Girardeau, Cedar, Crawford, Dade, Dallas, Douglas, Dunklin, Franklin, Gasconade, Greene, Howell, Iron, Jasper, Jefferson, Lawrence, Lincoln, McDonald, Newton, Ozark, Perry, Phelps, Pulaski, Reynolds, St. Charles, St. Clair, Ste. Genevieve, St. Louis, Scott, Stoddard, Stone, Taney, Texas, Washington and Webster.

### MULTI-AGENCY RESOURCE CENTERS

To assist individuals affected by the flooding in the Individual Assistance disaster declaration, a Multi-Agency Resource Center (MARC) was opened in St. Louis, Jefferson and Cape Girardeau counties, and two were opened in Franklin County. Additional MARCs and Points of Distribution (POD) were opened by local jurisdictions, especially in the southwest area of the state. The MARCs provided information and resources from a wide range of state and federal programs. Recovery specialists from FEMA, U.S. Small Business Administration



**Volunteers coordinate flood relief operations at the Jefferson County MARC in House Springs Jan. 9-10, 2016.**

and representatives from more than 35 other federal, state and local public and private entities were on hand to assist anyone who needed help with an assistance application. Combined, the MARCs provided assistance to more than 870 households.

Through March 7, FEMA had provided more than \$11 million in housing and other assistance to individuals affected by the disaster. The application deadline is March 21.

A drive-through Point of Distribution (POD) was held on January 6 in the St. Louis area for people in St. Louis, Jefferson and Franklin counties. A total of 325 vehicles were assisted, with people affected by the floods receiving flood clean-up kits, hygiene items, bottled water, food and cleaning supplies. The POD was coordinated by the St. Louis Area Regional Coalition of Community Organizations Active in Disasters (COAD) and Springfield-based Convoy of Hope.

Volunteer and faith-based agencies donated almost 30,000 volunteer hours.

### SHELTER OPERATIONS

To care for individuals and families who had to evacuate their homes due to flooding, 15 shelters were opened or placed on standby during the flooding and its aftermath. All but one were operated by the Red Cross. Shelters were opened in Branson, Arnold, Pacific, Cape Girardeau, Carthage, Manchester, St. Charles, Union, St. Robert and Joplin. The shelters housed a total of 74 people until they could return home or find more permanent housing.





Infographic used during Operation Recovery to help the public separate flood debris for more efficient removal.

## 'Operation Recovery' Speeds Debris Removal

(Continued from page 3)

FEMA tasked the U.S. Army Corps of Engineers and the U.S. Environmental Protection Agency with managing the removal of residential flood debris placed at curbsides and public rights-of-way in participating municipalities and unincorporated areas of Franklin, Jefferson, St. Charles and St. Louis counties where additional help was needed. EPA also was tasked with collecting household hazardous waste, major appliances, electronics, chemicals, pesticides, batteries, acids, and other containers and cylinders that cannot be placed into landfills. FEMA rules do not allow commercial debris to be included in the program.

Lt. Col. Grace Link led the Guard's debris removal task force involving 26 guardsmen. A community liaison team was assigned to helping coordinate the effort that was spread out over more than 2,400 square miles of the four counties.

The Guard's liaison team worked with representatives from the U.S. Army Corps of Engineers to coordinate directly with municipal leaders, engineers and emergency managers.

"Our team's focus from Day One was to take care of the people affected by the flooding and ensure a dedicated response in their time of need," said Lt. Col. Link. "The liaison teams ensured the correct information was disseminated, questions were answered and debris removal was conducted by contractors in a timely manner." The Guard's task force was demobilized Feb. 16.

(Continued on next page)

## MISSOURI Storm Aware

### Missouri Severe Weather Awareness Week

**March 14-18, 2016**

### 41st Annual Statewide Tornado Drill

**March 15, 2016**

**1:30 p.m.**

Learn more about severe weather preparedness at

**[sema.dps.mo.gov](http://sema.dps.mo.gov)**



## 'Operation Recovery'

(Continued from page 12)

Communicating with the public was a top consideration – first to get the public to separate debris into different piles so contracted crews could remove and dispose of it efficiently. An infographic was posted online and distributed with all news releases. To avoid large quantities of debris being deposited at curbs the day the pickups ended, the Feb. 15 end date was first announced on Feb. 3 by Gov. Nixon and publicized in daily news releases.

AmeriCorps St. Louis was charged with assisting with volunteer coordination, moving debris from homes and cleaning and sanitizing flood-affected homes. More than 100 AmeriCorps members were involved in the cleanup effort, which involved many local volunteer groups.

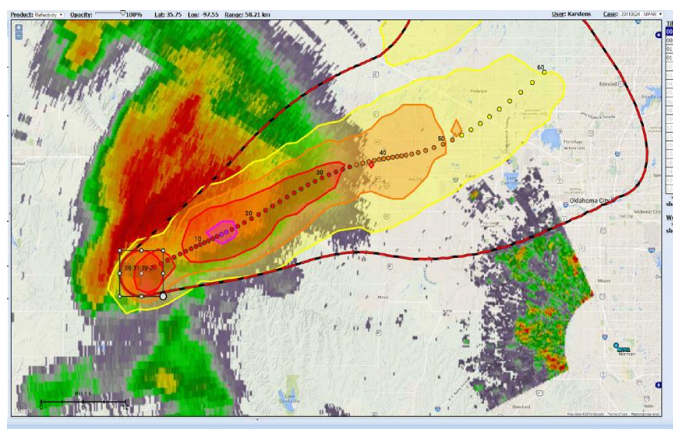
AmeriCorps and volunteers were a key to the program's success. Organizers knew that many people would need assistance cleaning out their homes and getting debris to the curb for pickup. In the program's final days, close coordination with AmeriCorps was essential to directing contract crews were to houses as cleanups were completed.

Contractors even made several additional sweeps after Feb. 15 to make debris pickups at houses that had requested assistance, but that volunteers had not been able to get to until after the deadline. By the program's completion, more than 670 homes received volunteer assistance coordinated through AmeriCorps.

Twenty St. Louis region jurisdictions participated in Operation Recovery: Arnold, Byrnes Mill, Eureka, Fenton, Florissant, Herculaneum, Kimmswick, Kirkwood, O'Fallon, Pacific, Portage des Sioux, St. Charles city, St. Peters, Union, Valley Park, West Alton and the unincorporated areas of Franklin, Jefferson, St. Charles and St. Louis counties.

Ultimately, Operation Recovery removed 2,929 tons of construction and demolition debris, 1,347 tons of sandbags and loose sand and more than 28,981 household appliances, electric items and other hazardous waste.

Using boats, cleanup crews searched 114 miles of the Big, Bourbeuse and Meramec rivers in the St. Louis region for hazardous flood debris. More than 1,600 items were retrieved from the rivers. In other affected communities, debris was picked up by city workers, regular trash haulers, contractors hired by the local government and/or volunteers.



An example of how the Warn-on-Forecast system could use a suite of computer models to predict the path of a potentially tornadic supercell during a one-hour period. The confidence level that the tornado will affect a given location is highlighted.

## NWS Works to Enhance Severe Storm Warnings

(Continued from page 3)

False alarms present another challenge for NWS when dealing with highly complex, rapidly changing storm systems, according to Kramper. These systems often produce cells that show the beginning signs of tornado production, which compel weather forecasters to issue tornado warnings. However, because of the quickly changing conditions, the tornado may never fully materialize and the warning must be canceled. A large, complex storm system could produce several false alarms, which can be confusing, difficult and potentially dangerous for the public.

"We are actively trying to reduce the number of false alarms and from the initial test results, it looks promising that Warn-on-Forecast can help us do that," said Kramper. "If we can perfect this system and the forecasters gain confidence in its results, it could lead to fewer tornado warnings being issued. The forecasters could hold off on the warning until the radar and environmental data clearly show a tornado threat."

**Make sure you're signed up to receive SEMA News.**

**Send your email address to:**  
**[brian.quinn@sema.dps.mo.gov](mailto:brian.quinn@sema.dps.mo.gov)**

**Use the subject "SEMA News."**

## Missouri Responders Issue Drone Warning

(Continued from page 4)

"Operating drones in or near flooded areas that are being monitored by helicopters can pose a serious danger to the crew on board," a Patrol press release warned. "Aircraft are also used for search and rescue operations. During these low-level operations, the flight crews' attention is focused upon fulfilling their missions, and should not be compromised by unmanned aerial flights."

Drones have interfered with emergency response efforts in other states, especially in California. Last August, a sighting of five drones flying over a wildfire that had closed Interstate 15 in Southern California grounded firefighting aircraft for 20 minutes. That delay was enough to allow flames to spread and destroy numerous vehicles parked on the highway.



### PUBLIC POLICY ON DRONES IS CATCHING UP

Currently, FAA rules dictate that hobbyists are to fly lower than 400 feet high and commercial drone operators 500 feet. All drones are supposed to fly during daylight hours within sight of the remote pilot, at least five miles from an airport and away from crowds, unless they have special permission from FAA. Drone pilots who break the law face a \$25,000 civil fine for reckless flying. But enforcement is difficult because authorities on the ground have trouble tracking drone operators from reports in the sky.

In an attempt to prevent drones from compromising air safety, on Oct. 19, 2015, the FAA announced it would require people to register their recreational drones in a national registry. On Dec. 21, the agency launched its online registry to make the drone registration process easier.

To learn more about the safe and responsible use of drones, go to: [www.knowbeforeyoufly.org](http://www.knowbeforeyoufly.org).

## SEMA Conference is April 19-22

(Continued from page 8)

The annual emergency management conference is designed for anyone with a direct role in emergency management or interest in emergency preparedness, response and recovery. It is an opportunity to learn and to develop valuable emergency preparedness partnerships.

Contact the Chateau on the Lake for room reservations at 1-888-333-5253. Let them know you will be attending the 2016 SEMA Conference to get the special room rate of \$94 per night. The Welk Resort will be the conference overflow hotel. To make reservations there, call (417)336-3575 and mention that you will be attending the SEMA Conference to receive their special room rate.

The Early Bird Special \$175 conference registration fee is available until March 18, 2016. After that date, the regular conference fee of \$200 will apply.

To register, and for more information on the 28th Annual Missouri Emergency Management Conference, click on the link in the "Upcoming Events" on the SEMA home page: [www.sema.dps.mo.gov](http://www.sema.dps.mo.gov).

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***News and Publications***

## SEMA TRAINING SCHEDULE

DATE	EVENT DETAILS	LOCATION
March	Hazmat IQ Training POST approved; Sponsor: MERC <b>Note: Multiple dates and times offered at this location. For details:</b> <a href="http://training.dps.mo.gov/sematraining.nsf/TrainingSchedule?OpenForm">http://training.dps.mo.gov/sematraining.nsf/TrainingSchedule?OpenForm</a>	
March	Hazardous Materials Incident Response: Awareness POST approved; Sponsor: MERC <b>Note: Multiple dates and times offered at this location. For details:</b> <a href="http://training.dps.mo.gov/sematraining.nsf/TrainingSchedule?OpenForm">http://training.dps.mo.gov/sematraining.nsf/TrainingSchedule?OpenForm</a>	
March-April	TRANSCAER(R) Crude Oil By Rail API-AAR Response Safety Course POST approved; Sponsor: MERC <b>Note: Multiple dates and times offered at this location. For details:</b> <a href="http://training.dps.mo.gov/sematraining.nsf/TrainingSchedule?OpenForm">http://training.dps.mo.gov/sematraining.nsf/TrainingSchedule?OpenForm</a>	
March-April	Hazmat Victim Decon for EMS POST approved; Sponsor: MERC <b>Note: Multiple dates and times offered at this location. For details:</b> <a href="http://training.dps.mo.gov/sematraining.nsf/TrainingSchedule?OpenForm">http://training.dps.mo.gov/sematraining.nsf/TrainingSchedule?OpenForm</a>	
March -May	Hazardous Materials Incident Response: 80-Hour Technician POST approved; Sponsor: MERC <b>Note: Multiple dates and times offered at this location. For details:</b> <a href="http://training.dps.mo.gov/sematraining.nsf/TrainingSchedule?OpenForm">http://training.dps.mo.gov/sematraining.nsf/TrainingSchedule?OpenForm</a>	
March 9-10	Hazardous Weather & Flooding Preparedness (APS Elective Course) POST approved; Sponsor: SEMA	Howell County EOC, West Plains
March 10	Isolation and Quarantine for Rural Communities Time: 8:00 a.m. - 12:30 p.m. POST approved; Sponsor: SEMA	NTA EMS and Rescue Training Room, Bethany
March 10	Isolation and Quarantine for Rural Public Safety Personnel Time: 1:30 p.m. - 5:00 p.m. POST approved; Sponsor: SEMA	NTA EMS and Rescue Training Room, Bethany
March 15-16	ICS400 Advanced Incident Command System POST approved; Sponsor: SEMA	Springfield/Greene County Public Safety Center
March 17	Mass Fatalities Planning and Response for Rural Communities POST approved; Sponsor: SEMA	Eugene E. Northern Community Hall, Rolla
March 22-24	Homeland Security Exercise and Evaluation Program (HSEEP) Training Course (APS Elective Course) POST approved; Sponsor: SEMA	Johnson County Central Dispatch, Warrensburg
March 23	Volunteer Dispensing Train the Trainer Course Time: 9:00 a.m. - 3:00 p.m. Sponsor: SEMA	Mo. Dept. of Health and Senior Services, Jefferson City
March 24	Incorporating Whole Community Inclusive Planning into the Emergency Management Process POST approved; Sponsor: SEMA	Capitol Plaza Hotel, Jefferson City
March 29-31	Community Emergency Response Team Train the Trainer Course Sponsor: SEMA	Laclede County OEM, Lebanon
April 5-6	Pediatric Disaster Response and Emergency Preparedness POST approved; Sponsor: SEMA	BJC Learning Institute, St. Louis

April 6	Critical Infrastructure Key Resources Awareness Time: 8:30 a.m. - 5:00 p.m. POST approved; Sponsor: SEMA	Cole County FPD Station 4 Training Room, Jefferson City
April 8-10	Wide Area Search POST approved; Sponsor: SEMA	Redings Mill Fire Dept., Joplin
April 12-14	ICS300 Intermediate Incident Command System POST approved; Sponsor: SEMA	Warren County EMA, Warrenton
April 19	SAVE Coalition On-site Leaders Training Time: 9:00 a.m. - 5:00 p.m. Sponsor: SEMA	Springfield/Greene County Public Safety Center
April 28	Rapid Needs Assessment (APS Required Course) Sponsor: SEMA	St. Louis County OEM, Ballwin
May	Population Monitoring for Community Reception Center POST approved; Sponsor: SEMA <b>Note: Multiple dates and times offered at this location. For details:</b> <a href="http://training.dps.mo.gov/sematraining.nsf/TrainingSchedule?OpenForm">http://training.dps.mo.gov/sematraining.nsf/TrainingSchedule?OpenForm</a>	
May 3-4	Sports and Special Events Incident Management POST approved; Sponsor: SEMA	Show Me Center, Cape Girardeau
May 3-4	Functional Assessment Support Team (FAST) Sponsor: SEMA	Arnold Police Dept.
May 3-15	Hazardous Materials Incident Response: Operations POST approved; Sponsor: MERC <b>Note: Multiple dates and times offered at this location. For details:</b> <a href="http://training.dps.mo.gov/sematraining.nsf/TrainingSchedule?OpenForm">http://training.dps.mo.gov/sematraining.nsf/TrainingSchedule?OpenForm</a>	Rolla Lions Club
May 4-5	WEM: Recovery from Disaster: The Local Government Role (APS Required Course) POST approved; Sponsor: SEMA	Dept. of Corrections Regional Training Center, Jefferson City
May 10	Principles of Frontline Response to Agroterrorism/Food System Disasters Time: Noon - 5:00 p.m. POST approved; Sponsor: SEMA	Cass County Sheriff's Office, Harrisonville
May 11	Principles of Planning and Implementing Recovery Time: 8:00 a.m. - 3:00 p.m. POST approved; Sponsor: SEMA	Cass County Sheriff's Office, Harrisonville
May 12	Working with the Media: A Short Course for Emergency Responders Sponsor: SEMA	Chillicothe Fire Dept. Training Room,
May 13	Mo. Structural Assessment and Visual Evaluation (SAVE) Coalition Training Time: 8:00 a.m. - 4:30 p.m. Sponsor: SEMA	Engineers Club of St Louis, St. Louis
May 18	Advanced Critical Infrastructure Protection Time: 8:30 a.m. - 5:00 p.m. POST approved; Sponsor: SEMA	Cole County FPD Station 4 Training Room, Jefferson City
May 19	Public Information Officer Awareness Training POST approved; Sponsor: SEMA	Howell County EOC, West Plains
May 24	Senior Officials Workshop for All Hazards Preparedness POST approved; Sponsor: SEMA	St. Louis County OEM, Ballwin
May 24-26	Basic Public Information Officer Training (APS Elective Course) POST approved; Sponsor: SEMA	Civic Arena, St. Joseph